National Institute of Environmental Health Sciences

The impact of climate variability and change on cryptosporidiosis and giardiasis rates in New Zealand

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Abstract:

AIM: To investigate the spatial relationship between climate variability and cryptosporidiosis and giardiasis notifications in New Zealand between 1997 and 2006. METHODS: Negative binomial regression was used to analyse spatial relationships between cryptosporidiosis and giardiasis notifications in New Zealand between 1997 and 2006, and climatological average rainfall and temperature at the Census Area Unit (CAU) level. The quality of domestic water supplies, urban-rural status and deprivation were included as covariates. MAIN RESULTS: Giardiasis: There was a positive association between rainfall and giardiasis and between temperature and giardiasis.Cryptosporidiosis: There was a positive association between rainfall and cryptosporidiosis and a negative association between temperature and cryptosporidiosis. The effect of rainfall was modified by the quality of the domestic water supply. CONCLUSIONS: These findings suggest that climate variability affects protozoan disease rates in New Zealand. However, predicting the effect of climate change from this study is difficult, as these results suggest that the projected increases in temperature and rainfall may have opposing effects on cryptosporidiosis rates. Nevertheless, water supply quality appeared to modify the impact of increased rainfall on cryptosporidiosis rates. This finding suggests that improving water supply quality in New Zealand could reduce vulnerability to the impact of climate change on protozoan diseases.

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Resource Description

Communication: ☑

resource focus on research or methods on how to communicate or frame issues on climate change; surveys of attitudes, knowledge, beliefs about climate change

A focus of content

Communication Audience: ☑

audience to whom the resource is directed

Policymaker

Exposure : ☑

weather or climate related pathway by which climate change affects health

Food/Water Quality, Precipitation, Temperature

Geographic Feature:

resource focuses on specific type of geography

Rural, Urban

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Australasia

Health Impact:

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Foodborne/Waterborne Disease

Foodborne/Waterborne Disease: Cryptosporidiosis, Giardiasis

Intervention:

strategy to prepare for or reduce the impact of climate change on health

A focus of content

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology:

type of model used or methodology development is a focus of resource

Outcome Change Prediction

Population of Concern: A focus of content

Population of Concern:

populations at particular risk or vulnerability to climate change impacts

Children, Low Socioeconomic Status

Resource Type:

format or standard characteristic of resource

Research Article

Timescale:

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content